



Sixth Framework
Research Programme
**Global Change and
Ecosystems**



Multagri Project

Capitalisation of research results on the multifunctionality of agriculture and rural areas

***Definitions, references and interpretations of the concept
of multifunctionality and its contributions to a
sustainable development***

**Summary report: International analysis of
MFA, international negotiations and
sustainable development**

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Authors² :

Tristan Le Cotty, INRA
Patrick Caron, CIRAD
Anthony Aumand, INRA
Denis Barthélémy, INRA

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The Multagri Project

Multagri : an overview on the multifunctionality of agriculture and rural areas

Multagri is a Specific Support Action undertaken within the 6th Framework Research Programme of the European Commission. With a partnership of **26 research organisations** from **15 countries** this project will provide a comprehensive overview of existing research, particularly in Europe, on different aspects of the multifunctionality of agriculture and rural areas. The approach adopted in this initiative is based on the premise that the multifunctional character of agriculture must be acknowledged and promoted so that agriculture can fulfill its potential as a central pillar of sustainable development.

From a state-of-the-art to recommendations for future research

Although the notion of multifunctionality only recently appeared on international political agendas, numerous social, cultural, technical and research practices already refer to it, either explicitly or implicitly. It is important to structure, assess and interpret these works to enable the identification of relevant questions for future research. This will be the role of Multagri, in six stages :

1. Evaluating the **state-of-the-art of current research**.
2. Further analysis and **understanding of ongoing research work**.
3. Identifying the **main institutions and networks** involved in this type of research, both inside and outside Europe, and paying special attention to new EU member countries.
4. Identifying the different **disciplines and scientific approaches** that are generating knowledge and conceptual backgrounds in this area.
5. Providing a **conceptual and analytical framework** that allows for the identification of approaches and topics for further research.
6. Formulating **recommendations for a future research agenda** concerning the multifunctionality of agriculture and rural areas.

Six research issues

Six thematic axes of research have been identified in order to structure the analysis and guide the development of recommendations for promising lines of future research:

1. Definitions and interpretations of **the concept of multifunctionality**, and its contribution to sustainable development.
2. **Consumer and societal demands**.
3. **Models, techniques, tools and indicators** that are of value in examining the multifunctionality of agriculture.
4. **Multifunctionality of activities**, plurality of identities, and new institutional arrangements.
5. Establishment and **management of public policies** aimed at promoting multifunctionality : connecting agriculture with new markets and services and rural SMEs.
6. **Evaluation of the effects of policies** on the multifunctionality of agriculture: observation tools and support for policy formulation and evaluation.

For further information, please
contact : Dominique Cairol,
Multagri co-ordinator,
Cemagref
dominique.cairol@cemagref.fr
T: 33 01 40 96 60 50
F: 33 01 40 96 61 34

<http://www.multagri.net>

Executive Summary

The word multifunctionality as a research topic has reached a real success among rural economists and in international institutions, providing new theoretical and empirical knowledge, and renewing the social debate between farmers and society. This knowledge has contributed to stimulate the international negotiations, and has spread in different economic streams, and in non economic fields like sociology or agronomy. Research works on multifunctionality are not necessarily related to the trade context any more, and can help designing new development models in rural areas, based on the simultaneous provision of multiple functions. Multifunctionality and sustainable development, which were originally clearly distinct ideas, are therefore getting closer today. The findings and gaps in the different scientific fields reflect this path in a sometimes confuse way, mixing disciplines, analytical and normative works, negotiation arguments and research efforts for a better agricultural development.

To order this flourishing and multidisciplinary knowledge on multifunctionality, it is necessary to relate research works to their scientific local context. The national reports provided this classification, leading to eight research clusters (see the synthesis of national reports). But it is also important to understand these works as a web of national contributions to the international debates on multifunctionality, in particular in reaction to the OECD works on multifunctionality.

This international report meets two purposes:

- (i) it synthesises the debate on multifunctionality at the international level in the major institutions, focusing on the search for a common multilateral disciplines framework for domestic policies aiming at supporting non trade functions of agriculture;

We analyse the evolution of scientific debates, thoughts and scientific results in international arenas and their connection with political agenda. There is a consensual recognition of the multifunctional character of agriculture and of its usefulness as a positive concept to qualify and analyse the very nature of agriculture. This report mainly accounts for these analyses even though most of them lead to normative speculations. A considerable amount of analyses have been established but have not brought any consensual view on the multifunctionality of agriculture, nor on the best ways to promote it. Nevertheless, we can identify several streams within which researchers came to similar analyses of what multifunctionality is, and sometimes, what are the best policies to support it.

The multilateral dimension of multifunctionality has very early focused on the search for a “recognition” of the multifunctional nature of agriculture, which has somehow skipped the scientific analytical work on multifunctionality as a way to describe agriculture, and which does not refer to a question of recognition or not, but to a question of knowledge. Nevertheless, international debates have had a considerable role on scientific works on multifunctionality, which now constitute a valuable input for future discussion on multifunctionality, or sustainable development, or whatever negotiators call future societies’ expectations towards agriculture around the world.

This section splits the review into four main institutions:

- Multifunctionality in trade negotiations, at the origins of the concept in the reform of agricultural policies at the world trade organisation (WTO): the central issue was how to deal with non trade concerns in a trade arena ? Do the amber box, the blue box and the green box offer a suitable framework ?
- the OECD framework for analysing multifunctionality in a policy design perspective ;
- the FAO analysis on roles of agriculture, which provides a development-oriented view on multifunctionality.
- The EU views and policies on multifunctional agriculture: what would be a co-operative framework taking into account the specificities of agriculture ?

(ii) it describes the way scientific communities have reacted to the international agenda in different disciplines, and have produced knowledge in different fields of research corresponding to scientific streams or networks, sometimes structuring themselves around multifunctionality, or similar concepts. These groups of research are called here concept oriented research clusters (CORCs). They can be organised in epistemic communities or can simply adopt similar hypotheses, methods and research questions concerning the idea of multifunctionality (see the synthesis report). The interest of identifying these clusters is to relate the different definitions and outputs to the research stream in which they are enrooted, the implicit or explicit goal of researchers, and their research questions.

We describe the CORCs starting with the description made in the national case studies, and completing it with extra literature from international institutions and non European authors. For each CORC, we provide elements of definition, consensuses, controversies, empirical elements and recommendations for policy making. The literature used is as broad as possible review of published documents referring explicitly to multifunctionality as a research topic, non trade concerns, multiple roles of agriculture or multiple functions of agriculture.

The viability of the word multifunctionality of agriculture is challenged at least as a negotiation topic within the WTO trade negotiations. Nevertheless, the authors of this report insist that the considerable amount of knowledge that this word has lead to, should not be left aside. Whatever they call it, governments will face the necessity to take into account national expectations toward agriculture in a context of global integration.

In addition, from a purely scientific perspective, the explicit debate on multifunctionality tends to move from a trade-related problematic to rural and agricultural development models or concerns. The remaining most striking needs for further research are summarised in table 1. There is still a need for matching better societal demands toward agriculture with research priorities. The evolution of each concept of multifunctionality inside each epistemic stream and the way research teams have made it a research topic is not clarified yet, and a better integration and strengthening of scientific communities is still required.

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Introduction

In response to needs of international negotiations, the word multifunctionality as a research topic has reached a real success among rural economists in some leading European countries, and in some international institutions like the OECD (Organisation for Economic Co-operation and Development) and the FAO (Food and Agriculture Organisation), providing new theoretical and empirical knowledge, and renewing the social debate between farmers and society. Up to now, this knowledge has probably not really renewed the modalities of international negotiations, but it has spread in various economic streams, and in non economic fields like sociology or agronomy. This evolution has given a scientific status to the word, that was primarily confined to the trade negotiations, broadening the scope of its meanings. This has brought the word further from the negotiations, but it has also enriched the concept, in reference to a diversity of contexts and scientific perspectives. In the end, the concept of multifunctionality probably better addresses the diversity of stakes of rural development than it used to. It has also gained in complexity, making it necessary today to structure the knowledge on multifunctionality to make all these works to be useful. In particular, we needed to relocate all these works in their scientific setting. What is the research question addressed ? What are the main limits ? In what context are they relevant ? And thus, in what way do they contribute to the international debates? This is the main achievement of our work.

Therefore, this report meets two purposes: (i) it synthesises the debates on multifunctionality at the international level in the major institutions, focusing on the search for a common multilateral framework for domestic policies aiming at promoting non trade functions of agriculture; (ii) it organises the scientific productions on multifunctionality, and the way they should be looked at, describing the way scientific communities have addressed different research questions, reacting to the international agenda and to each others' output, in various disciplines. We have identified clusters that correspond to these scientific streams or teams, or networks, organised around more or less structured concepts, sometimes shared, sometimes argued on. These groups of research are called here concept oriented research clusters (CORCs), which adopt similar hypotheses and research practices to come to identified results in their disciplines.

The literature used to build this report is a broad review of published documents referring explicitly to multifunctionality as a research topic, non trade concerns, multiple roles of agriculture, or multiple functions of agriculture. Those works that do not intentionally refer to it are not -or only marginally- included in the review. Furthermore, we have decided to put forward the conceptual content of the publications, accordingly to the mandate of this report:

“Review and synthesis of main international research works in this field (a.o. by OECD). Analysis of the main thematic issues and debates, points of theoretical and conceptual (dis) agreement, and of the principles employed to seek for conciliation and economic co-operation”.

In the first section, we describe the evolution of scientific debates on multifunctionality in international institutions. The second section identifies and analyses the concept-oriented research clusters and describes the scientific debates among different epistemic communities at an international level.

1 – Multifunctionality in international institutions : from trade negotiations to sustainable agriculture and rural development (SARD)

This section is a review of international debates and works on multifunctionality launched in international institutions. They reflect the evolution of the use of word, from the need for international recognition of the specificity of agriculture, and implicitly, for specific policies (its normative side), to the need for more in depth analytical development of its scientific content (the positive side).³.

This multilateral dimension of the debate on multifunctionality is fundamental because it can decide what will be the “norms” of public intervention for non trade concerns in the agricultural sector in the future.

This section develops how the concept of multifunctionality has evolved in major institutions, within the EC, in international trade negotiations, at the OECD and in the FAO.

1.1. The EU conception of multifunctionality: from the agricultural exception to a co-operative multilateral framework

The origin of the European reflection on multifunctionality

During the Uruguay round, and because of the negotiation, the EU had to decrease its price support to farmers, and replace it by direct aids. This was the basis for the 1992 CAP reform. This made the public support to farmers much more transparent, which was the start of a new reflection in Europe that is still running today: What do we support farmers for ? What do they provide us with, that the markets do not remunerate them for ? The EU was well aware of the need for a set of international disciplines, including the decrease in price support. And in the same time, it was well aware that the existence of agriculture in its own territories met a significant support from the civil society. But was this support for food production, or for something else ? Addressing this question was and remains fundamental to design an appropriate agricultural policy (which farmers ? how much ? etc.)

³ The words positive and normative are used in this report in its meaning in public economics. In short, a normative approach leads to a recommendation for public policy. A positive approach is a description, interpretation or analysis of economical reality. It is very difficult to remove totally the normative side of the analysis of the multifunctionality case, because the idea of “functions” of agriculture in itself attributes a higher value to the state of the world where agriculture provides “these functions” as compared with a state of the world where agriculture has no functions, but only an existence..

Therefore, even if this came from the trade liberalisation, the first interrogation on agricultural multifunctionality was a domestic one, and it came from the EU and some other countries facing the same situation (high price support before the Uruguay round and traditional citizen support toward farmers).

The intuition that agriculture provides the world with food and some other goods or functions has very soon been a natural answer to the liberalisation and has thus been very early trade-biased, probably before having reached a scientific and social maturity at the domestic level.

The rural environment, food security, biodiversity, landscape, identity goods, etc., were the first non trade concerns that came up. These goods are fundamentally to be addressed at the country level and national research works on these are still on-going. Nevertheless, the corresponding domestic policies (including domestic support to farmers) have trade effects, especially when food production and public goods are associated. Therefore, the compromise between the trade co-operation and the national sovereignty in policy making also raises questions at a multilateral level. In particular, a major issue reflecting the EU view on multifunctionality is the following: can multifunctional policies be comprehensive policies involving the whole national agriculture or should they be specific to some areas, some productions, or some practices ?

The agricultural exception: a general case for national agriculture or targeted policies ?

The intuition that the agricultural sector has important specificities is widely accepted, either in the name of the “agricultural exception” making trade rules in agriculture different from other sectors (in brief, legitimating of some degree of protectionism) or for case by case reasons, such as social support to marginal farms, the correction of externalities associate to land use, etc. These two visions of the specificities of agriculture refer to two very different conceptions of multifunctionality, and lead to very different types of public interventions. The EU has developed the first one (the comprehensive approach) for a long time because it was in line with its traditional farm policy. We are forced to see that the recent reforms of the CAP left a larger place to the second vision, leading to more targeted measures promoting specific practices in specific areas, and more decoupled support.

The comprehensive approach of multifunctionality considers agriculture as a whole, non market functions being produced simultaneously and consubstantially with food production. The policy required then includes instruments like price support, tariff protection, production subsidies, that aim at regulating, protecting or developing the food production itself. They do not explicitly target a particular type of farmer neither a particular function. Nevertheless, they generally lead to an increase in existing farmers' revenues and farm production, especially on the short and medium term (Barthélémy, 2003; Kroll and Bazin, 2003; Pingault, 2002).

Nevertheless, farmer organizations, NGOs (Non Governmental Organisations), sometimes consumers and policy makers sometimes tend to appreciate this price support approach of multifunctionality for its administrative simplicity, because it does not raise the question of the economic justification of farmers' support by the rest of the society, and simply reproduce the existing distribution of the domestic support.

This integrated approach can also be interesting if there are high costs of administration of targeted policies, or a weak measurability of public goods provision. In these cases, supporting globally food production or farmers' revenue might be more efficient or socially more desirable, than setting a series of many measures for each separate public good associated to the production. Price volatility is another justification for price regulation and maybe production quotas (see Bazin and Kroll, 2002).

Moreover, every one agrees that this integrated approach, prevailing in Europe from 1962 until at least 1992, has been very efficient to develop agricultural production in Europe, at a time where it was a net importer of food.

But these measures also have several side effects that are not necessarily desired by policy makers, this is why mainstream economists tend to mistrust these measures. For instance, these policies can have a social cost in terms of input price increase, factor allocation inefficiency, demand side price increase, etc. (Mahé and Ortalo-Magné 2001 in particular). In addition, for the majority of them, it is necessary to target policies accordingly to public economic principles to prevent mis-use of domestic support, notably over public funds capture by private interests (Mahé, 2001 ; Guyomard, 2001; Hervieu *et al.*(2001). Apart from the trade stakes, this first type of policy was also questioned at the research level, because linkages between farm production and non-commercial outputs depend on the type of crop or livestock production, the use of intensive or extensive production techniques, the type of soil etc. Most environmental and landscape effects are clearly local. The environmental, biodiversity, landscape and other non-traded goods linked to farming can be better handled at the level of the farming systems.

This second type of policy, based on targeted instruments, has met more support in academic literature in economics for efficiency reasons (Romstad et al., 2001; Peterson et al., 2002; OECD 2003). If they have impacts on the production, these impacts, whether desirable or not, are always more limited quantitatively. This approach is recommended by the OECD as explained above.

Policies for multifunctionality can be targeted on a few farmers adopting an ecological farming system, like organic farming. The policy can for instance offer a premium for converting conventional farming into organic farming, like it is the case in the CAP now. This premium (instead of a price support to organic food) is an incentive for shifting from one farming system to another, and not an incentive to increase the production of the pursued farming system. The targeting can also rely on payments for farmers located in sensitive areas, whatever their farming system, or for farmers cultivating rare species, whatever the location or the practices, etc. The policy can be a targeted production subsidy, but is more generally providing contracts, like agri-environmental measures, or the French Territorial Farming Contract (CTE) or the Sustainable Agriculture Contract (CAD) (see the French national report).

The EU attempt to promote the recognition of multifunctionality to maintain a significant part of integrated farm policy has been harshly challenged and its conception has evolved in a way to integrate to need for freer trade. Therefore, the agricultural exception is not put forward in developed countries anymore, at least in the trade negotiation context. To some extent sustainable development can be seen as a new version of arguments for integrated approaches, but this will be discussed in a next section.

Nowadays, the influence of multifunctionality in the CAP can be found especially in the second pillar, which refers to policies in support to rural development. The corresponding measures are generally specific to a group of farmers, locally adopting specific practices. Each country can use this second pillar budget with some flexibility in its national policy for multifunctionality, like France did with the territorial farming contract (CTE). But there is a slow move toward integration of ecological conditionality for the attribution of aids from the first pillar, which accounts for a slow integration of society's social demand in the rationale for the CAP payments. At this stage, it remains difficult to interpret eco-conditionality as a tool for multifunctionality, but we cannot exclude either that it could eventually turn in a more specific policy.

Nevertheless, one has to keep in mind that it is difficult to analyse the multifunctionality in the CAP because of its counter-effects arising from the first pillar of the CAP (the production oriented payments and transfers), often linked to the distributional rationale of the payments, that have not been really addressed yet.

Who should pay for multifunctionality : the national and the multilateral dimensions ?

The first vision of a "comprehensive multifunctionality" of agriculture generally considers that the food consumers should pay for multifunctionality. Farmers are primarily food producers and the farming activity is and should be remunerated through the products prices. If the price is considered too low by governments, which remains the case for many productions in Europe, the CAP can ensure a price support for farmers. The requirement for this type of policy to be efficient is that the production of the food is intrinsically multifunctional, whatever the production practices, and the farm location and size. This vision does not identify each component of multifunctionality but considers that multifunctionality in general will be supported through prices.

Price support remains a major instrument in the CAP and in the US Farm Bill and this is why the comprehensive view on multifunctionality is generally seen as a conservative and protectionist one.

A way to make the transfer from consumers to farmers more targeted and incentive is to improve the labelling on indications of food quality (labels, indications of origin, protection of intellectual property for specific knowledge, etc.). These attributes of quality often have a positive impact on the environment (different from the impact on the product quality itself), or on the economic development of a particular area for instance. Organic farming meets a consumers' willingness to pay for food quality, but also for ethic or non market reasons, which is a potential way to remunerate farmers for their non market positive effects.

Defenders of targeted policies for multifunctionality mistrust price support, which increases in the same time the positive externalities and the negative externalities of the production (see Mahé and Ortalo Magné, 2001). For them, territorial public goods should be remunerated by public payments. Tax payers should be the payers for many economists, since the public goods should be paid by those who enjoy them (a consumer does not enjoy a landscape when he buys food). CTEs (see the French national report) can for instance be interpreted as a transfer from French tax payers to farmers to

encourage them to provide the pursued public goods (landscape, heritage, biodiversity, etc.). It furthermore integrates some elements of the WTO decoupling definition to decrease their trade effect. Theoretically, some payments that have the effect of subsidies can be justified for multifunctionality reasons (Vatn, 2002, Peterson et al., 2002, or Romstad et al., 2001). Some other works show on the contrary that because of the lack of environmental incentives of coupled payments (like production subsidies), the payments do not easily reach the right farmers or do not stimulate the right practices (Mahé et Ortalo-Magné, 2001; Mahé et Laroche, 1999 ; OECD, 2000; Anderson, 2004). Besides, targeted policies like agri-environmental measures (Natura 2000 for instance) give a higher credibility to the hypothesis of a multifunctionality-oriented CAP, and are supported by economists even in terms of efficiency (see Bonniex and Rainelli, 2000; Le Goffe and Mahé, 2000).

This raises the issue of the applicability of the subsidiarity principle at the European level. If most public goods jointly produced with farm commercial output are local, regional or national, it is debatable whether CAP funding should be provided for their production. But, on the other hand, the recognition of option and bequest values for some ecosystems, landscapes etc. point to a general appreciation by the European society for those public goods that go beyond national boundaries and deserve some sort of European-wide funding or co-financing. It could be particularly the case of the non-use values of specific regional or national biodiversity wealth that could be a matter of interest for many European citizens, independently of their country of residence. In this case, the relevant social utility function would include local environmental goods, and also environmental goods provided by other countries' farming systems (Atance, 2003).

Another way to encourage the provision of public goods is to set fee-paying access to natural parks and agri-tourism (guest rooms, etc.). People in Europe argue that public goods that are marketable do not really address the fundamental issue of multifunctionality, and is not even a problem of public policy (see Kroll and Nieddu, 2001).

The policy required to promote multifunctionality is likely to affect some foreign countries' welfare, as soon as it affects trade, or the level of production. Therefore, an option that the EU might think of in the future would be to imagine economic transfers between countries that would compensate for the losers of multifunctionality. Protecting EU's collective preference can sometimes be done without hurting trade partners, sometimes not. In this latter case, the global cost of protecting EU collective preferences can include international compensation. Multifunctional agriculture poses indeed the question on the international justification of public policies undertaken by some particular countries for internal reasons (see Le Cotty, Aumand and Voituriez, 2003).

1.2. Multifunctionality in trade negotiations

The trade nature of the problem

The Uruguay round agreement of the WTO concluded in 1994 as started a period of international questioning on the legitimacy and rationale of domestic support to farmers around the world. Domestic support started being considered trade distortive in the USA (United States of America) and in the EU (European Union), and it had been decided to reform the agricultural domestic policies towards trade

liberalisation. Support to farmers had to be reformed in a way that would eliminate its effect on production and prices. At the WTO, the dominant view was that domestic support should not prevent trade liberalisation, which means that import increase should not be prevented in the name of domestic concerns. Several governments had realised that this liberalisation scheme would lead to difficulties for some farmers or for their food self sufficiency, and started thinking of a new rationale for domestic support. Governments turned to their rural economists, to find if there were scientific arguments in favour of domestic support to agriculture in comparison with other economic sectors (for instance linked to the agricultural exception). In the same time, citizen food concerns were growing in the world, specially in Europe with the mad cow disease, as well as a social demand for a “greener agriculture”.

Fears aroused among farmer unions, national governments, consumers and citizens liking to eat what is grown in their country, and multifunctionality, although the word had already been used confidentially since a few years (see box 1), appeared as a major concept to structure this debate.

Box 1 : emergence of the term “multifunctionality” : diverse origins...

It is difficult to say exactly when the term “multifunctionality” was first used. But more than the use of the word, it is interesting to see when the recognition of the idea of multifunctionality emerged.

One paper (www.enarpri.org/Publications/SPNo1.pdf) states that "The notion that agricultural activities produce multiple outputs is not new. The term 'multifunctionality' appears to have been first used in Austria in the 1980s." The OECD paper for Austria (http://www1.oecd.org/agr/mf/doc/agrmf_aus.pdf) also states clearly that discussions on different 'functions' and 'roles' and 'non-commodity outputs' of agriculture started very early in this country, as early as the late 1960's. However it is doubtful if this has been under the explicit use of the term 'multifunctionality' (Henk Renting).

At the end of the 1980's, several sources are mentioned as having made references to the 'new' roles and functions of agriculture : the Brundtland report (1987), the Green Paper of the European Commission on the Future of Rural Society (1988) and the Rio Summit on Sustainable Development (1992), but there was no explicit use of the word “multifunctionality” in this context.

By the 1990's, the recognition of the multiple functions of forestry was widely shared. In the resolution H1 taken at the Ministerial Conference on the Protection of Forests in Europe (16-17 June 1993 in Helsinki), it is said that : “Forestry policies (...) should strongly encourage practices in state and private forests which facilitate multiple functions and sustainable management” (<http://www.mmm.fi/english/forestry/policy/minkonf/resoh1.htm>).

One of the first explicit uses of the term “multifunctionality” applied to agriculture was in this same period, at the XVII Congrès Européen de Droit Rural in october 1993 in Interlaken, Suisse on the issue of *L'Agriculture multifonctionnelle: Aspects juridiques* (according to Catherine Laurent, WP4). The proceedings were published later (1999) - in view of the growing use of the concept - by the publishing house L'Harmattan, Paris.

In any case, it is clear that this concept was already quite used before the works of FAO and OECD around 1999, although the controversies that emerged from them brought “multifunctionality” into the spotlights.

The non trade concerns and the green box at WTO

The existing agreement on agriculture at WTO permits some domestic support : payments linked to the production level (“the amber box”), and payments decoupled from the production level (“the green

box"). The former payments are submitted to reduction commitment, the latter are not. Some intermediary payments, linked to quasi fixed production factors can be continued temporarily under some conditionality ("the blue box"). In the future, it is likely that countries will have to rely on the green box to promote their agriculture, and this green box contains the requirement that domestic support to farmers should not influence the level of production. In other words, the rights of countries to promote their agriculture is limited to some policy instruments, included in the green box that will be renegotiated soon. It is therefore urgent from a political point of view that scientists address the following issues in a multilateral framework : Is the green box compatible with multifunctionality? Is it compatible with domestic goals and if not, are these goals legitimate? Is it helpful to promote multifunctionality and non trade concerns efficiently?

The present framework of the green box, supposed a trade off between the necessity to limit trade distortions and to enable some domestic support to farmers, is based on the principle that public intervention in agriculture should leave market signals work (see also OECD, 2003). This rests on two main principles of the green box :

domestic support to farmers revenue should be decoupled from their production choice variables (prices and variable quantities). The article VI of the green box states the modalities of this type of payments ;

any authorised domestic support (support to farmers' revenue, environment, rural development, etc.) should have minimal effect on market production and prices.

The political debates on domestic support based on these two criterions in the nineties are at the root of the emergence of the concept of multifunctionality.

Ten years later, economically, the rationality of these two criterions have not been clearly established (except in very particular conditions, see the next section on decoupling). For some defenders of multifunctionality, the green box criterions are too stringent and too market oriented to integrate the diversity of farming systems, local institutions, cultural heritage, etc. Others find on the contrary that this green box is not sufficient to make the international trade fairer because it does not prevent the inequity between farmers' revenues.

Paradoxically, it is often recognised that the list of measures covered by the "*green box*" offers a wide, and under-used, space for the design of appropriate policies for a *multifunctional* agriculture, but that some changes are necessary to permit better accommodation of the non-commercial functions of agriculture within the rules of the *WTO* (Reig, 2002).

As Hodge (2000) has argued, the objectives of agricultural multifunctionality admit some level of production-related support if countryside services are complementary joint products with farm outputs and have significant public good characteristics. Under these circumstances, payments to farmers represent the legitimate correction of a market failure, *even* if they distort trade relationships.

The general conditions attached to the allowable payments in the *green box* do not always make much economic sense. The main requirement was that the payments should have only a minimal impact on production, or no impact at all. It is dubious that even fully decoupled payments don't influence investment and production decisions by farmers when risk and wealth effects are taken into

consideration. Even more questionable is the assumption of illegitimacy of programs with significant unintended production effects. Programs that target the provision of public goods or the correction of externalities linked to agricultural production can have considerable side-effects on farm outputs that can be labelled “trade-distorting”. But this label can’t be used as a byword for something regrettable. The economic theory of internal distortions (Bhagwati, 1971, Corden, 1974) has clearly pointed out that a *production subsidy*, or a *factor subsidy* can be used as corrective measures in case of a domestic market distortion, being clearly preferable to a *tariff* or any quantitative trade restriction.

The WTO is adopting a highly controversial position when it forbids the use of policy instruments to correct an environmental externality that is supposed to have effects on production and trade distortion. That kind of policy intervention can modify domestic consumption or production - and consequently trade flows-, as an answer to a *previous* internal distortion, owing to the existence of a market failure (Blandford, 2001). The change in production caused by the multifunctional-oriented intervention is not measured against a theoretical “first best” situation, but against the current observed level, - that is already distorted – . It means that there is not a clear reason to argue in favour of a null production effect of the policy intervention (Burrell, 2001).

The move toward decoupling of domestic support

The implementation of decoupling is one of the most controversial issues about multifunctionality even within the economic mainstream. Policies that support multifunctionality aim at orienting farm production in a different way than in free market conditions, whereas decoupling aims at re-establishing prevailing economic conditions closer to free market conditions. In the case of multifunctionality, whatever its formal definition, free market is not a perfect market, that is, where prices reflect the social optimum.

According to the welfare theory, decoupling is the best way to support farmers’ revenue in a undistorted world). Therefore, in such conditions, an optimal farm policy would only be a social policy, designed to support farmers’ revenues, and only the revenue (not the production). In this case, where agriculture has not to be oriented in one way or another, decoupled transfers to farmers are more efficient. But this is not true anymore in a world with externalities, distortions, market power, asymmetry of information or market failure for access to credit (specially in Southern countries). The second best policies in a real world are therefore much more complex to define.

For any other reason than supporting agriculture farmers’ revenue, decoupling is not necessarily the best policy.

Most studies on multifunctionality conclude on the need to implement some kind of support for farmers if society should benefit from more non market goods that are joint to the marketed production. In most cases, the existence of a net positive non market value of agriculture is assumed rather than demonstrated (net positive externalities or jointness between commodity outputs and public goods), but not always.

Nevertheless, in the reality, if coupled transfers are not optimal (like if the payments do not benefit the right farmers, if they further favour pollutions for instance) they are likely to increase distortions instead of treating them (see for instance Anderson K., 1998; Blandford et al., 2003). In the end, the robust arguments in favour of decoupling are not as much theoretical as empirical.

Besides coupled measures can be used in a commercial way, to distort or restrict trade, which is always inefficient according to the literature on trade theory (see Bhagwati 1971 or Corden 1997), but they can also be used to favour desired farming systems, their effects or consequences, if targeted to these particular systems, which is efficient. Thus there is often confusion between impact on trade and trade distortion. A trade distortion is a change in world prices that creates inefficiency. Strictly, a change in world price due to a domestic policy is a distortion only if the free market world price is optimal, which means that the world is “perfect” in the neoclassical sense (with no uncorrected externalities, no market power, etc.). In any other case, the free market world price is not optimal. An impact on trade can improve welfare provided it results from an efficient domestic policy implemented to correct prices taking externalities into account.

The question of how to handle the market effects of non market policies is not really solved from a theoretical point of view. Whatever the instrument, public policies are likely to modify prices and quantities, and interfere with international competition, and efficiency (see Romstad et al., 2001; Vatn, 2002; Peterson et al., 2002; Paarlberg et al., 2002.)

The theoretical debate on decoupling is well documented, although there is a growing international scepticism towards so-called decoupled payment commercial neutrality. But decoupling is the only real reference that contributes directly to the multilateral trade negotiation in an operational way.

The question of targeting domestic support is a bit different in its meaning and in its practical consequences. Targeting is a question of scope of the policy whereas decoupling is a question of the nature of the instrument.

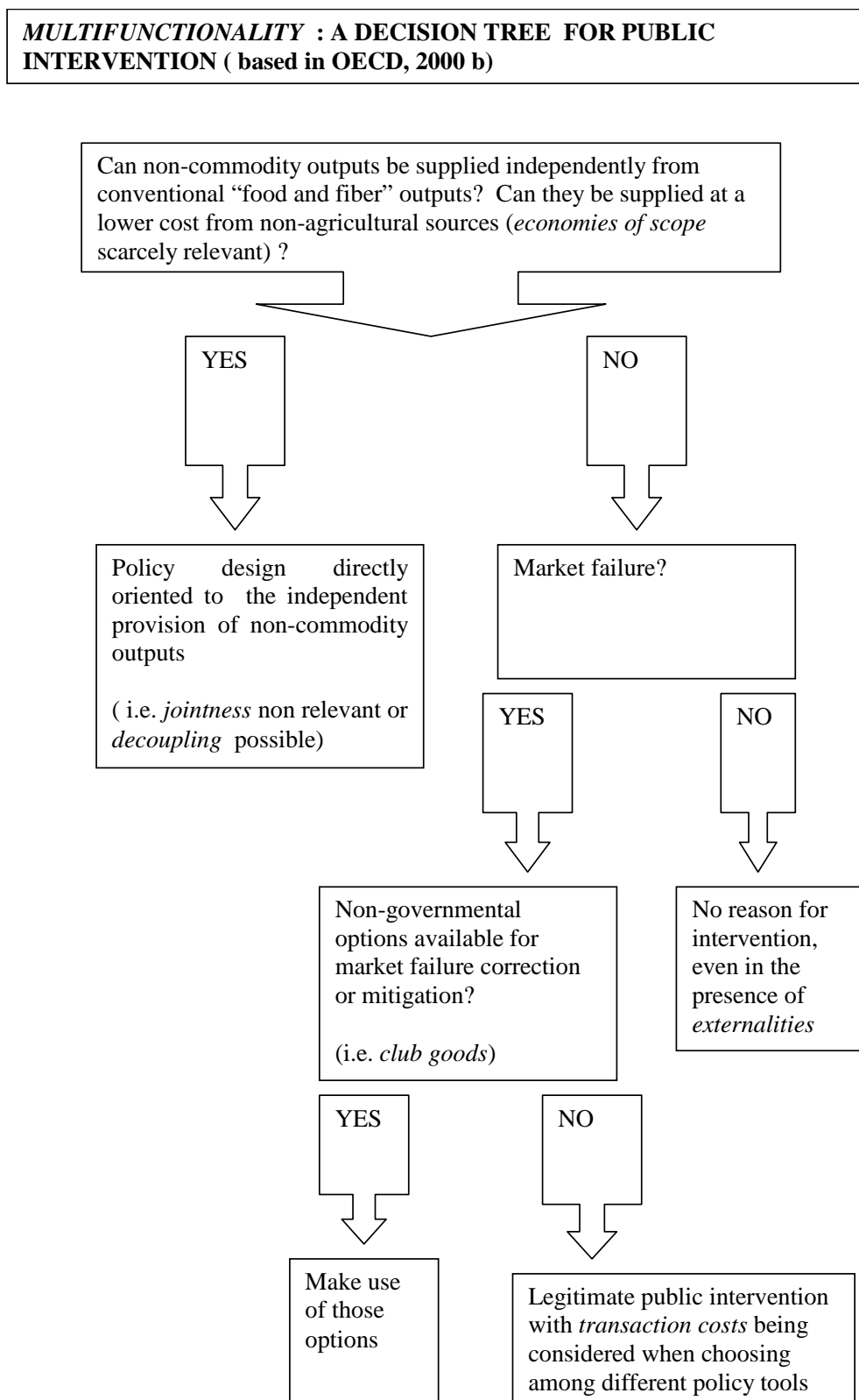
Policies can be coupled or decoupled whatever the scope of people concerned by the policy. A production subsidy is always coupled, but can be “targeted” if it benefits a small group of farmers (in a particular area or with a particular farming system). On the contrary, decoupled or semi-decoupled payments like European deficiency payments, based on land and addressed to a large scope of farmers, are not targeted.

1.3. The OECD analytical framework for policy design for multifunctionality

Based on this economic discussion, the OECD has launched a wide research and expertise program to understand what public intervention can be justified by multifunctionality. The use a positive definition of multifunctionality that has been re-used by many authors afterwards (section 2.1.) and come to the normative following framework for efficient public intervention, given the exogenous requirement to in the objective to minimize the impact of domestic policies on world prices.

They give a list of several questions that governments should answer to design the most adapted policy (figure 1).

Figure 1. The OECD decision tree for public intervention



Source: E. Reig

Based on this scheme, the OECD established the following steps that public policies should follow (see box 2). This framework is clearly market-based and has been built in reference to the WTO requirements to release markets signals, and to leave world prices unchanged.

Box 2: Steps established by OECD to design public policies.

Public policies should respect the following steps:

- countries should tend to adopt the OECD framework for public action;
 - this should be done in a transparent manner, taking into account the trade-off between the cost of getting information and the desired degree of precision of the policy ;
 - the nature of negative externalities and non commodities should be defined in specific, quantitative and accountable terms.
 - in the case of weak jointness, public intervention should always be targeted on the non commodity itself and should be associated to no other activity than the production of the non commodity
 - in the case of strong jointness, the existence of a market failure for non commodities other than negative externalities should be established. If no failure is established, no public intervention is required;
 - if a jointness and a market failure are established, the public intervention can target either the non commodity or the joint commodity, but should not be conditioned to the production of this product, so as to prevent loss of efficiency; the fixed jointness is the only exception, in which case the public intervention has a necessary trade distortion effect;
 - the public intervention should target as closely as possible the outputs or inputs related to the non commodity, and as distinctly as possible from the outputs or outputs linked to the production intensity;
 - the public intervention should always be geographically targeted if possible;
 - transaction cost should be taken into account;
 - in the case of a generalised intervention, conditionality should be implemented;
 - the administrative or political level of decision should correspond to the level of expected results;
 - quantitative measurements of the results are required;
 - in the case of uncertainty on the result, a progressive approach is required for the implementation;
 - it is necessary that the public intervention integrates all the non commodity outputs, including the internalisation of negative externalities, for instance in comparison to reference thresholds.
- Developing institutions to enable the establishment of a non commodity market is required before implementing the public policy, to promote non governmental remuneration of the public good.

1.4. Sustainable agriculture, rural development and the FAO: analysis on the roles of agriculture

The idea of multifunctionality in the trade context has helped to instrument the international debate on domestic policies, and has spread in other fields of reflection, in particular for the public policies linked to sustainable development. Today the vitality and interest for multifunctionality has probably decreased in the trade context (notably since the EU acceptance to decouple further the premiums of ex-blue box), but increased in the sustainable development context, even if the two ideas are clearly different.

In charge of the application of the chapter 14 of Agenda 21, which focused on Sustainable agriculture and Rural Development (SARD), the FAO in particular has led a series of research including fields work to find out what are the roles of agriculture and land in differing geographical contexts. The purpose is not to provide a unified framework for policy design as it is the case with OECD (Organisation for Economic Co-operation and Development) works, but on the contrary to establish the diversity and complexity of agriculture's contribution to societies. Nevertheless, the FAO work also has a normative ambition: *"To provide policy-makers with specific insight, tools and information with which to analyse the roles of agriculture and the related policy implications in order to pursue sustainable agricultural and rural development."*

At first, the FAO interested itself to the word multifunctionality (FAO, 1999) which had emerged within the Uruguay round negotiations. However, the debate became so polemic, with several groups in opposition, "Friends of Multifunctionality"⁴, "Group of Cairns"⁵, Southern countries⁶, that the word was then avoided (FAO, 2001) and replaced by other impartial expressions, such as "Roles of Agriculture" (ROA). But in both contexts, these works provide an alternative view on multifunctionality, free from any concern of compatibility with trade competition or even trade negotiation framework.

The project on ROA of the FAO underlines the specific needs of southern countries. In north-western countries, agriculture is mainly a commercial activity, at least from the farmers' point of view. The key issue relating to multifunctionality is : what place for non market aspects of food production, and what remuneration/protection ? Whereas in southern-eastern countries, agriculture is often a non market activity to a large extend (self consumption, way of life, etc.), and the question is rather how to increase the value of farm activity through food production and marketing and its social benefits (FAO, 2001). Can one unify the concept to include these two types of non market functions ? Can this lead to the same policies ? (See in particular Losch, 2004)

4 EU, Switzerland, Norway, Japan, Korea. To summarize, these countries tempted to promote the idea that the multifunctionality justifies agricultural policies in favor of national production, either protectionist policies or coupled domestic support.

5 Argentina, Australia, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Guatemala, Indonesia, Malaysia, New Zealand, Paraguay, Philippines, South Africa, Thailand, Uruguay (in December 2004). These countries succeeded in putting agriculture on the multilateral trade agenda. They have adopted the most liberal position, in the name of fair trade and have always dismissed the idea of multifunctionality as a normative tool.

6 Other expressions are usually used in Southern countries, such as New Ruralities (Bonnal et al, 2004)

Other authors or institutions have launched works on sustainable agriculture and rural development and have differentiated themselves substantially from the trade related debate. This is both an advantage because it broadens the list of what can be called multifunctionality and a weakness because it does not consider the need to account for external trade effects of domestic policies.

There are similarities between multifunctionality in this sense and sustainable development.

Both concepts recognise the existence of market failures and the necessity to integrate non market welfare effects in domestic policies. The implicit recognition of the need for a national and international regulation is also shared in both fields, even if the policies might differ. The value of diversity to face uncertainty and risks towards the future is a key aspect of this approach, close to sustainable development. The natural resource management, and the need to ensure a protection of social systems are also borrowed to the field of sustainable development. The dangers and fears towards liberalisation and market competition are not explicitly present in this analysis, but they are at the root of these works. Nevertheless, substantial differences exist at least from a conceptual point of view. Firstly, the time dimension is not always necessary in the multifunctionality debate to justify public intervention, even in the FAO approach of multifunctionality. Immediate market failure or immediate farmers' needs is sufficient to require a domestic policy, even if they do not endanger the continuation of activity. Secondly the idea of diversity and plurality is at the heart of the idea of multifunctionality whereas it is not at the center of sustainable development, which is generally defined in terms of the balance of depreciation and appreciation of all forms of capital (physical, human, social and human) and does not necessarily exclude specialisation (see Legg, 2000).

2 – Emergence of international concept-oriented research clusters

The flourishing literature on multifunctionality covers an increasing diversity of scientific objects, whereas the political uses of the word has been cooling down for the last few years. This withdrawal of the political agenda may be partly due to the diversity of meanings and to a relative lack of clarity on the concept of multifunctionality itself. In most research works, the authors use and develop one meaning of multifunctionality that fits to a particular scientific perspective. Very few authors consider the various possible meanings of multifunctionality and discuss the implication of their choice on their findings. This section provides an organisation of the existing literature in a way to explicit the conceptual affinities between the different researches on multifunctionality, and the implications they have on the type of agriculture considered, the relevancy of the concept as a guide for policy making, etc. Through a comparative analysis, we present eight Concept Oriented Research Clusters (CORCs) as a way to characterize how research communities work on multifunctionality. This classification makes it easier to look at the strengths and weaknesses of the different meanings to account for different points of view on agriculture and sustainability.

Each CORC is characterized by a relative homogeneity in the research questions addressed, in the concepts used or discussed by scientists to lead their work, and by the scientific disciplines, the streams of thought or possibly the epistemic community researchers belong to. Table 1 (page 44) gives a synthesis of this description.

2.1. *A joint production of commodities and public goods*

Scientific perspective

This first CORC is built upon analyses of multifunctionality by neoclassical economists around 2000 in relation with the international debates on trade and domestic support to farmers. The authors in this CORC have adopted a shared and explicit definition of multifunctionality based on the jointness between commodity outputs and public goods or the presence of externalities. They often refer to the concept of non-trade concerns as a synonymous of multifunctionality. This conception of multifunctionality is consistent with the 'positive' definition laid down and used by the OECD (2000). This cluster is fairly international, including American works, and uses a limited number of shared hypotheses and concepts arising from neoclassical economics (environmental economics, economics of production and trade, or other sub-areas of welfare economics, neo-institutional economics, etc.). The literature covered here mainly focuses on the efficiency of public policies or institutional arrangements in order to promote joint public goods and positive externalities and on their legitimacy in relation with the international negotiations. In that sense, this CORC often involves a normative dimension too, even if the definition of multifunctionality itself is essentially positive. Analytical firmness is the main strength of this CORC, and the lack of empirical evidence of jointness its main weakness. In addition, analytical results are applicable in countries with a market economy and significant farm policies, which is not the case in most developing countries.

Elements of definition

With in view to build a framework for public intervention in the name of multifunctionality, and with the implicit objective to minimize trade modification, the OECD (2000) provided a conceptual definition of multifunctionality, transversal to any functions of agriculture, and some analytical developments based on welfare economics. This definition states that a multifunctional agriculture relies on jointness between commodity outputs and non commodity outputs, the latter having properties of externalities or public goods.

The description of jointness can be characterised by various possible technologies:

- a fixed proportions between productions (OECD, 2001; Vatn, 2002);
- a complementary relationship between productions (Bonnieux and Rainelli, 2000 ; Romstad);
- economies of scope between market outputs and non market outputs due to a fixed factor (Dupraz and Bonnieux, 2003);
- economies of scope between food production and environmental consumption (Vermersch, 2004).

Jointness is typically defined at the farm level (OECD, 2000; 2003), but it can also be defined at the territory level (Mahé and Ortalo-Magne, 2001) thus including in the analysis geographical complementarities or anti-complementarities between farming activities and public good provisions.

In the most general sense, agriculture can provide society with non market goods, but these non market goods could also be provided, at a different cost, through non agricultural technologies. The critical economic debate is about the cost of providing a socially optimal level of public goods through agricultural support or other means. Strictly, public goods are not a function of agriculture, but an opportunity for agriculture to provide several types of goods at a possibly lower cost.

Externalities are the second aspect of this welfare economics interpretation of multifunctionality. Contrarily to joint public goods, externalities are not identified goods but effects of a farming activity on other agents that cannot be priced as such. The policy is more likely to be based on the private goods involved in the production than targeted on the public goods (see OECD 2001, 2003).

Positive externalities are not necessarily public goods, they can arise from localised agro-food systems that concentrate activities that are organically bound together (Requier-Desjardins, 2002). For Mollard (2002 and 2003), location on a territory gives rise to coordination among actors allowing certain types of farming to enhance the value of their area's amenities.

Hediger (2003c and 2004a) elaborates an integrated perspective for multifunctionality and sustainability beyond hypotheses of jointness and externalities in accordance with neoclassical economics.

Elements of consensus

The main interest of this definition is to make it possible to use the concept for a welfare-based analysis to enlighten the normative discussion on the efficiency of policy tools. It enables an objective discussion on domestic support for multifunctionality under a fundamental hypothesis of jointness between farm products and public goods. It is a rather narrow vision of what can be analysed as "multifunctionality", but which contributes to make its political credibility in the trade context, and decreases the range of possible policies led in the name of multifunctionality. Most other visions of multifunctionality, that have often appeared afterwards, have a broader, more comprehensive meaning.

Agriculture all over the world generates positive and negative externalities whatever the farming system (Ervin, 1997 ; Bromley, 1997; Peterson et al., 2002; OECD, 2001, Vatn 2002, Romstad et al., 2001 ; Bonniex and Rainelli, 2000; and Salanié and Le Goffe, 2002). Their internalisation by farmers increases social welfare. The ideal instruments for positive externalities, in the case of perfect information, are production subsidies or input subsidies, thus proportional to private variables of the production function.

The existence of jointness in agriculture between farm commodity outputs has been recognized for a long time, but still meets some scepticism as for public goods (Anderson, 1997 ; Bohman et al., 1999)

Elements of controversies

OECD (2003) puts in doubt the fact that positive contributions of farming to the society can be considered as an externality (they are rather joint public goods). Agricultural externalities are more often the result of a failure of market-regulating institutions than the product of the market itself (see for instance Allaire and Dupeuble, 2003). They also question the fact that agricultural externalities are mainly positive (see also Ervin, 1997). OECD states that public payment is not the first best policy for internalising externalities when it is possible to set a market of secondary goods, like landscape services, etc. Furthermore, even if non governmental mechanisms are not possible, the existence of externalities does not mean that there is a market failure, if the cost of the public intervention exceeds the cost of *laissez-faire*.

Furthermore, the countryside is not necessarily something that people are attracted to. The majority of rural areas in Poland struggle with typical restraints of being situated in peripheral areas, remote from the economic centers (Duczkowska-Małysz 1994, Duczkowska-Małysz 1998, Piaseczki, Konieczny 1995): obsolete socio-professional structures, registered and latent unemployment; an undeveloped business and institutional infrastructure, the lack of new enterprises; an unfavorable demographic situation, combined with a low level of education among rural communities, which is an important constraint of the development process.

On the contrary, many authors also think that this definition excludes very important dimensions of the non market side of agriculture, like rural employment, food security, or cultural dimensions.

Some others, including OECD (2003) are sceptical about the empirical importance of jointness between commodities and public good. OECD also questions the necessity to maintain this jointness when it exists.

It is not clear whether this definition should be broadened to enlarge the debate within OECD, or should be tightened to come to some kind of consensus on some policy aspects.

Empirical Elements

Few studies give a quantitative valuation of the demand for multifunctionality, often based on the contingent valuation method for environmental amenities or landscape, or on the hedonic price method (Bonnieux and Rainelli (2000) ; Bonnieux and Dupraz (2003); Salanié and Le Goffe (2002) ; Peterson et al., Randall, (2002). The farmers' extra cost for protecting landscape and cultural amenities in peri-urban areas also has been evaluated (Cavailhes and Bonnaud, 2002).

Cretegny (2001, 2002) uses a general equilibrium model introducing the environmental function, and represents it as a pure public good jointly produced with an agricultural private good. Hediger and Lehmann (2003) and Hediger (2003a) jointly address external benefits and costs that result from rural landscape amenities and water pollution, respectively.

Pillet et al. (2000) give a comprehensive view of the external costs and benefits of Swiss agriculture. They reviewed the literature on externalities, and, looking beyond its economic function, they

evaluated the ecological and social functions of agriculture. They first elaborated a conceptual framework which captures the various functions and values of agriculture.

For Pecqueur (2002), a further role of public policies is to support coordination among actors so that the amenities of a geographical area are effectively internalised.

Normative elements (recommendations for policy making)

Analytical works based on the jointness tend to define public policies for multifunctionality in the objective of maximising national welfare, according to the standard definition of welfare, or in the objective to comply to international trade rules.

The under production of joint public goods is the major justification of public support to farmers from the welfare economics point of view (Vatn, Romstad; Le Goffe, 2003 ; Hediger and Lehmann, 2003).

The consistency of actual farm policies with principles of multifunctionality is nevertheless very often questioned (Guyomard, 2000; Le Goffe and Mahé, (2000; Mahé and Laroche). Many authors recommend that possible distortions induced by public intervention should first be avoided as far as possible in order to improve the efficiency of agricultural policies (see Reig, 2001).

Whenever non governmental mechanism for environmental services are not possible (OECD, 2003, see also Tió & Atance, 2001), targeting is the key word of normative researches on this approach of multifunctionality (Mahé and Ortalo Magné, 2001).

Transaction costs tend to weaken a bit this broad recommendation, since it raises the cost of reaching a high precision level in the policy (Vatn, 2002; Atance, 2003).

2.2. Multiple impacts and contributions from agriculture to rural areas

Scientific perspective

CORC 2 gathers interdisciplinary works focusing on the impact analysis of agriculture in a particular area. This cluster's originality is not the conceptual qualification of multifunctionality. It rather attempts to build an empirical and comprehensive focus of the state of agriculture in an area and its contribution to changes. This CORC deals with the contributions of agriculture at the holding level or at the territory level, with its impact on a community, a territory or a society as a whole. Findings on those aspects of multifunctionality are brought by economists, sociologists and agronomists adopting research questions such as the assessment of the impact itself (on employment, landscape, income, etc.), or how to promote farming diversification in agricultural and non- agricultural activities (important issue in eastern European countries for instance). The empirical relevancy of this CORC is its main strength for decision making whereas the lack of conceptual unity and robustness is its main weakness for research purposes.

Elements of definition of multifunctionality

Multifunctionality refers here to the multiple contributions, functions, impacts, marketable or not, of farming on societies, communities or a territory (in the French sense of a local area defined by a common cultural heritage) and for their development.

Contributions of agriculture to national welfare includes here commodity production, food safety protection (ensuring quality and maintaining productive potential), upkeep of the geographical area, environmental protection, production of a rural economic and social fabric, production of social ties, visitor functions of the rural world, cultural capital, diversification of rural activities (Laurent (2000); see also Revel *et al.* (2002), Pingaud (2001), Solagral (1999), Léger (2001) and Berriet-Sollicec (2000)). It can also contribute to shaping a positive image of the territory which reinforces its contributions to the development of the area (Pilleboue, 2002). Bonnal *et al.* (2003) also emphasise the agricultural contribution to foreign earnings, as it is the case on the island of Réunion.

The number of farmers in developed countries is an important aspect of multifunctionality to this respect. Guyomard and Levert (2001) highlight the effects of various agricultural policies on the number of farmers and on prices, profits, quantities produced and exported, intensification. Rural employment is fundamental in Poland too (see Hadynska and Hadynski, 2004).

Elements of consensus and controversies

The lack of assessment of these impacts is always a very controversial issue. Some believe that such assessments would have no real meaning because the main impacts are not quantifiable, others believe that it really would help policy makers.

The existence of impacts of farming is not always accepted as a relevant character to identify the specific nature of agriculture as compared with industry or services that also have impacts on society's well-being. These analyses might therefore not be sufficient to help reforming or improving public policies since every economic activity has some positive and some negative impacts.

Following Hayek (1960), some authors wonder why society should protect non profitable farming activities instead of letting the agriculture sector disappear? There is therefore a controversy on whether to consider rural employment as a legitimate impact, implying that rural employment may be socially more valuable than urban employment (see Daniel, 2002; Guyomard and Levert, 2001; and Gohin and Guyomard, 2003) .

Furthermore, the link between a model of development and the environment is not always established. The modernization model and the existence of a favorable institutional environment of policy incentives, research and extension might bear the roots of the rural environment (Ploeg, 2001, Roep & Wiskerke, 2004). In eastern countries like Poland, impacts of agriculture on rural areas are mainly the expected positive social impacts of an increased productivity (see Hadynska and Hadynski, 2004).

Empirical Elements

Impacts of farming on society

Many case studies confirm the great impact of agriculture on societies in terms of social roles, economical roles and environmental roles (see in particular works by FAO and CIRAD in many Southern countries).

Most studies conclude that the impacts mainly depend on the type of farming. Bonnal *et al.* (2003) on the island of Réunion, Callois *et al.* (2002) in Massif Central, Revel *et al.* (2002) in Languedoc-Roussillon find different impacts on the local environmental, social and economic contributions of the different types of farms. Morardet (2002) shows how the irrigation water management may depend on the specific characteristics of their holdings. Deraeve (2002) assesses the environmental, economic and social impacts of changes in agricultural holdings in a wetland area of environmental value (Cotentin and Bessin marshes). Aznar and Perrier-Cornet (2003) in Auvergne assess provision of environmental services by farmers (an 'intervention on a natural good with a view to allowing its environmental use') in rural areas, according to whether the service had been paid for or not and whether it entailed a supplementary work charge for the farmer or not.

Impact of policies

The difficulty of this part of course is to isolate the effect of one single policy on the farmers' behaviours.

Several authors studying the effect of the CAP reforms and of new instruments on the actual multifunctionality of farming system come to disappointing results. Bazin and Kroll (2002) examine what were the impacts of the CAP market policy on producers' technical choices, and state that they are often contradictory with multifunctionality. Bazin and Kroll (2002) and Chatellier *et al.* (2003) also evaluate changes in the distribution of direct aid from budgetary transfers of the EU to farming, in France and at the European Union level. Both conclude that the changes are slight.

Studies on the contract specifically oriented towards multifunctionality in France are more optimistic to a certain extent. Ulmann (2002) uses performance indicators such as the support for the measures, the impacts on crop rotation, on holding structures, to estimate the efficiency of the grass premium.

Normative elements (recommendations for policy making)

Recommendations here are not necessarily based on welfare effects of policies, but on their impacts on the environment, and on the territory.

In eastern countries, the main expected impacts seem to be an increase in farm modernization and productivity. Beside labour and migration issues, the achievement of an appropriate level of industrial system is also crucial for multifunctional rural development. It can be obtained through an enhanced development of agri-tourism (including farm tourism, eco-tourism, hotel industry, gastronomy); nature services (the conservation of landscapes, municipal services), processing of wastes (recycling materials, composting ...), trade (mainly food trade); sustainable agricultural economy; forestry and

fisheries, use of natural energy resources (delimitating and restricting uses and seeking alternative and renewable sources of energy) (see Hadynska and Hadynski, 2004).

2.3. *A complementary and conflicting connection between commodities and identity goods*

Scientific perspective

CORC 3 mainly includes economists working on an alternative view of multifunctionality in reaction to the common definition. They do not share the dominant opinion that non trade concerns in the field of agricultural multifunctionality should be analysed as resulting of market failures, which would find its solution either by creating new markets or by way of public good production. Researchers in CORC 3 consider that the development of market exchange unavoidably involves the destruction of identity and reciprocity structures. The non market exchange dimension of agricultural production is precisely assigned to restore identities and reciprocity relationships (concerning community and resource management, culture territory, intergenerational link...). This CORC develops another economic rationality (based on identity or reciprocity economy) which sets the limit to the rationality of the market exchange economy. Empirical works of this analytical stream are conducted in several parts of the world (EU –national implementations of Rural Development Regulation-, North and South America, Africa) and show the way these two complementary and conflicting dimensions of agricultural multifunctionality and sustainable development are implemented or co-existing: on the one hand market exchange organisations and market price systems, on the other hand identity and reciprocity organisations (mainly renewal or new establishment of communities) and framing of non market price systems. Each of these two economic ways tends to overflow the other, resulting in movements and changes. Researchers draw the concrete lesson that there always will remain two different (market and non market) organisation and price systems, and that political task consists in managing and controlling conflicts between them and not to hopelessly keep trying to reduce one dimension to the other. The main strength of this CORC is its ability to account for economical values in farm production that CORC 1 does not account for (cultural dimension in particular). Its main weakness probably lies in its lack of anchorage into the “standard” economic literature and of visibility in the normative side of multifunctionality debates.

Elements of definition

Multifunctionality designates here the relationship between market productions and heritage-based values which society needs and/or wishes to produce or reproduce and which contributes to its continued existence (Barthélémy and Nieddu, 2002). These identity goods can be linked to the type of agriculture or to a geographical area (Aznar and Guérin, 2002).

Multifunctionality is analysed as the explicitation of the necessary adjustment between the conditions for producing market goods and those for producing identity goods.

The development and implementation of public policies involve a trade-off between market rationality (the search for market efficiency) and non-market rationality (the search for efficiency with regard to preservation of heritage and identity). Barthélémy and Nieddu (2002) bring out the importance of non-market rationality in the implementation of CAP instruments such as milk quotas or agri-environmental programmes.

Controversies

The national desire to preserve cultural values is not necessarily recognized as a favourable condition for economic efficiency in the neoclassical sense, especially in the new world, where “changes in the private demands should imply changes in the supply”, which is sometimes not compatible with the reproduction of the cultural values. Some authors do attribute an economic value to identity goods. Barthélémy and Nieddu (2002) point out that the term ‘non-market’ used by most economists simply describes a lack of market, and contains the implicit view that the economic ideal is the market, whereas identity-related goods contain an economic value (even if expressed in terms of non market prices), as long as society needs and/or wishes to produce or reproduce them, and they contribute to the group’s continued existence.

Empirical Elements

Sabourin and Djama (2002) state the roles of farming in strengthening social cohesion or heritage relationships through mechanisms of mutual aid and redistribution in New Caledonia and the Nordeste region of Brazil.

Barthélémy (2003) coordinates a research programme based on case studies in Europe, Africa and South-America to test two main hypotheses: (i) economic goods are to be considered as part of functionalities formed from a set of market and non-market relations, embedded in social structures which themselves are both market and non-market structures; and (ii) multifunctionality means the necessary coexistence of market and non-market functionalities in agriculture. Studies in Mayotte (Sourisseau *et al.*, 2004) show how market and non-market activities interlock permitting the ‘economic and social survival of the domestic group. Comparable results are reported for a study of New Caledonia by Djama (2003). In the Nordeste of Brazil, Sabourin (2003) shows that the collective appropriation of the means of production, in line with a non-market, heritage-related rationale, is the necessary condition for guaranteeing social cohesion and care for the environment and at the same time for providing the resources to ensure market production. In Senegal Mercoiret *et al.*, (2004) show that participation in the market economy relies on the heritage-based food production economy which helped to overcome the last crisis of international commodity markets. In terms of legal analysis, Bodiguel (2004) shows how, in France and the UK, farming law definition invariably includes local and social considerations. Doussan (2004) shows how multifunctionality involves ideas of general interest leading to infringements of competition law, meaning that the instruments for implementing multifunctionality, despite their contractual appearance, cannot operate with straightforward market rules.

Andriot (2003) states that the CAP derives both from a market logic (including amenities remuneration) and a non-market or distributive logic (creation of institutions of coordination for

ensuring specific heritage). This hypothesis is tested through the study of agri-environmental policy instruments implemented in three regions of the European Union (Auvergne, Bourgogne and Scotland). In the same research framework, see also Bourgogne, Hesse, Wales (Dubois, 2003; Castelbou, 2003).

Normative elements (recommendations for policy making)

The authors in this stream conclude that there is a need to counterbalance the current drive towards greater deregulation of markets and to reorganise and develop the production of heritage and identity goods through economic processes alternative to market economics (Barthélémy and Nieddu, 2003).

2.4. *Farmers strategies and practices: multifunctionality, technical change, livelihood systems*

Scientific perspective

CORC 4 includes agronomists and economists who work at the farm scale and perceive multifunctionality as a motor that drives agricultural practices. Research activities recognize two major and different focuses: the design or the promotion of “good practices” according to ecological norms on the one hand, and the understanding of practices and farmer’s individual choices by taking into account multifunctionality on the other hand. This CORC and more particularly the second focus actually bring a new dimension into the analysis of farming choices and decision making processes as research objects. For economists, the interest refers to the way non market objectives can be reached through private actors used to react to private signals. Therefore, multifunctionality requires new methods to assess and improve the procedure for farmers decision making, taking into account a wide range of functions and trade-offs. There are two basic research questions in this CORC : (i) what is the interpretation of multifunctionality in terms of farmers decisions and behaviours ? (ii) to what extent has the recognition of multifunctionality (in public policies or in local institutions) led to a change in farmers’ practices and strategies? The main stake here is not to qualify a list of functions of agriculture, but to consider the new functions as factors of change (“environmental protection”, “landscape management”, family welfare, etc.) trying to further see how producers’ technical choices are moving in this direction. This CORC’s main strength is its potential effectiveness in understanding and promoting principles of multifunctionality at the farm level. Its main weakness is the lack of a common analytical dimension toward these principles.

Elements of definition

Multifunctionality is perceived by agronomists and economists in different ways. According to a normative posture, it might be considered as a set of “good” agricultural practices. Those “good” practices do not refer here to social demands, but more to ecologic norms (sometimes combined with economic ones), that should be integrated in farmers’ individual choices. On the other hand, for researchers interested in the analysis of farming choices and decision making processes as research

objects, it brings a new paradigm. Multifunctionality leads to the need for new methods to be designed in assessing the way and procedure for farmers to make their decisions by taking into account a wide range of functions, the trade-offs that have to be addressed and the consequences that derive from them. Some researchers are for example interested in knowing to what extent the recognition of multifunctionality (in public policies or in local institutions) has led to a change in farmers' practices, or again to changes in farming strategies toward multifunctionality. They usually do not attempt to identify any list of functions of agriculture, but consider more the new functions, like environmental protection, the maintaining of landscapes, or the contribution to rural employment, trying to see if producers' technical choices are moving in this direction or not.

Empirical Elements

A few empirical studies attempted to analyse farmers' adaptations to the new social demand for environmental services and to new policies.

For example, in the nineties, farmers in the Netherlands developed and engaged themselves in several kinds of promising (new or revitalized) activities serving in particular consumers or societal needs and functions: on-farm processing and direct sales, marketing of high quality products, management of nature and landscape, farm integrated care activities, organic farming, energy production, and so on. In the 1990's these strategies were conceptualised in terms of *rural innovation*, *rural development activities* (*broadening*, *deepening* and *re-grounding*) and lately *green services* (Roep and Oostindie, 2004).

In France, the consequences of the CTEs on farmers' practices have been analysed with the objective of drawing some conclusions about farmers' adaptation (Léger, 2001; Josien et al., 2001). Léger studied the setting up of CTEs in 22 departments of France and concluded that the priorities in these contracts are:

- modernisation of techniques to optimise externalities, meeting the society constraints on farmers' use of public goods;
- diversification in the production of services;
- conservation or production of public goods considered as specific assets that can be employed in a territorially-based industry scheme;
- production of goods shared by the actors in a geographical area.

Other studies analyse the adequation of farmers' choices with their objectives. For example, Girard et al (2004) interest themselves to the relationship between diversity of livestock farming practices and the capacity of livestock to satisfy space management objectives and plans in the Pyrenees region.

2.5. Multiple use of rural space and regional planning

Scientific perspective

CORC 5 gathers authors who work on multifunctionality as a policy guide to integrate new objectives in farm policies in complement to the main drive towards agricultural modernisation and productivity. The normative dimension in this CORC is relatively significant, the aim being explicitly to providing a scientific basis for objectives such as redirecting funds to less-favoured areas, reinforcing the diversification of economic activity, promoting alternative values of agriculture like the landscape protection, etc. As in CORC 2, and for the same reasons (empirical relevancy) the conceptual roots of multifunctionality is not at stake, research methods can be rather heterogeneous, and research teams are pluri-disciplinary. CORC 5 includes scientists and experts from urban and rural planning, landscape architecture and social geography, integrates multiple functions of agriculture but also multiple uses of the territory. A typical research question in CORC 5 is : what is the best way to organize spatial planning by taking into account the impact that agriculture may have on the attractiveness and sustainability of rural and urban living areas ? CORC 5 is particularly well represented in the Netherlands, where competition between land users is high, but also in Spain. Its main strength is its direct orientation toward an evolution of policy making. Its weakness, as far as research is being concerned, is a lack of conceptual robustness of the definition of multifunctionality.

Elements of definition

Multifunctionality is interpreted here by policy-makers as a land use approach of rural activities. This CORC mainly originates from the Netherland and also find some relevance in the UK. Wherever land is a scarce resource there is a willingness to think about the best possible allocation based on planning methods and practices, using in particular GIS (geographical information systems).

Elements of consensus and controversies (Roep and Oostindie, 2004)

There are oppositions of conception between two major spatial development models: (i) driving agriculture towards modernisation and competitiveness (specialisation and production basin), providing a basis for redirecting funds to less-favoured areas, and (ii) diversifying and integrating rural activities or promoting alternative values of agriculture like landscape protection (Reig 2004; Roep and Oostindie, 2004).

The *Neo-modernisation perspective* conceives agriculture as a predominantly mono-functional activity, and scale enlargements are considered necessary to increase economic efficiency. Multifunctionality is restricted to the *regional* level to create space for undisturbed agricultural growth at the *farm* level. This explains the importance of land use as a tool for multifunctionality in countries like the Netherlands (as opposed to the micro level like in France);

The *Rural Development perspective* perceives agriculture as inherently multifunctional, i.e. the technological interaction between man and nature co-produces all kind of integrated functions at the landscape level. The contribution of agriculture to new societal demands is seen as an actor of

liveability of rural areas. Therefore, specific attention is given to farm-based rural development activities as a contribution to land planning, through the strengthening of rural economies in response to new societal demands at large.

2.6. *Adjustment between activity systems and societal demands as a way toward sustainable agriculture and rural development (SARD) regulation*

Scientific perspective

CORC 6 involves authors who seize the emergence of MF as an opportunity to build a holistic view of agriculture as a way toward sustainable agriculture and rural development, and therefore as a way to re-embed agriculture within society. The arising of MF in the debate on sustainable development helps to point out what are the specific contributions of agriculture to rural development, including analyses of its role in food supply chains (notably in the Netherlands), of the compatibility between sustainable development with farm competitiveness (notably in Poland), of its importance for the maintenance of rural population in less favoured areas (notably in Spain), etc. Scientists belong to very diverse disciplines, but share the common concern of sustainability that goes beyond the analysis of functions and their relationships. The strength of this CORC is its comprehensive ambition making it possible to analyse agriculture globally in the long run. Its main weakness is a lack of analytical firmness in the characterization of agriculture.

Elements of definition

Multifunctionality is defined here in as a holistic concept, as a way toward sustainable agriculture and rural development. *Rural Development* has been the focal point and the buzzword for all those policy-makers and academics that wished to express support for a policy design not strictly centred on the farm as a production unit, and able to consider the complex interrelationships between agricultural production, the environment and the social fabric in the rural areas. *Rural development* has sometimes played a similar role in the policy debate in Spain as *multifunctionality* in other national contexts (Reig, 2004; see also Hedinger 2004).

Lehmann (2002a) provides an original contribution to the concept of multifunctionality of agriculture, by addressing it from a comprehensive point of view. He investigates and critically reviews the concept of multifunctionality and its policy implications from an economic perspective.

Elements of consensus and controversies

Land use has been much debated among farmers, politicians, scientists, agro-industry, nature conservation groups, consumer groups and other stakeholders, and these debates have triggered the need for a new license to produce, (toward a *socially responsible agriculture* in a *neo-modernisation*

perspective, see Roep and Oostindie, 2004). Producing raw material for the agro-industrial value chain as efficiently as possible, by means of ongoing scale enlargement and cost price reduction, did not appear to be the most promising development strategy in making agriculture sustainable. This was emphasized by other authors, who argued that an export orientated, low added-value agriculture had no future in the Netherlands and agriculture should meet other needs at stake in rural areas (e.g. residence, recreation, nature, infrastructure and so on) that are backed by a powerful demand (wealthy citizens, consumers, real estate developers, etc.).

There is no obvious and unambiguous relationship between a model of agriculture and sustainable development or rural development, partly because there is no unanimous definition of rural development. Rural development can mean more productivity in some context like in eastern countries or less productivity in western countries. In eastern countries like Poland, impacts of agriculture on rural areas are mainly the expected positive social impacts of an increased productivity (see Hadynska and Hadynski, 2004). The modernization model and the existence of a favorable institutional environment of policy incentives, research and extension might bear the roots of the rural environment (Ploeg, 2001, Roep & Wiskerke, 2004).

Should rural employment be included in multifunctionality is another controversial side of this approach, which implies that rural employment can be socially more valuable than urban employment (see Daniel, 2002). And if so, what are the best policies to protect rural employment (Guyomard and Levert (2001), and Gohin and Guyomard (2003) ?

Heritage economics is a way of producing and distributing goods which aim at ensuring the continued existence of economic and social groups, including the conditions for generational renewal in terms of environment and social cohesion. Thus in today's forms of agriculture, multifunctionality is the expression of the necessity to link market production with the conditions required to preserve economic and social continuity across generations. Aznar and Guérin (2002) illustrate that promoting 'multifunctionality processes' helps handling with the traditional conflicts in the use of natural resources such as land. Most empirical works developed by Barthélémy's research team show how the intergenerational and environmentally friendly aspects of farming practices are managed together with today's market necessities.

Normative elements (recommendation for policy making)

For Mahé (2001), Guyomard (2001) and Hervieu *et al.* (2001), the ties farming has with geographical space is the genuinely specific character of agriculture and may justify support (including negative support to deal with nuisances), where market failure occurs.

2.7. A social demand towards agriculture

Scientific perspective

CORC 7 includes researchers focusing explicitly on the demand side for multifunctionality. The demand side is largely present in each CORC, but generally as a given matter of fact. For researchers in this CORC, multifunctionality is primarily defined by the multiple expectations or requirements of the society toward agriculture. Fundamentally these expectations are the very justification for agriculture to be oriented in a multifunctional way. These authors develop methods to identify and quantify (in terms of the tax payer willingness to pay for example) these social demands and eventually, the ways agriculture might be able to meet them. The methodological stake in this CORC is very high given the lack of reliable and objective information which is available, and given the high controversies on existing methods. The main strength of this CORC is the value of the pursued information for policy makers. For economists, its main weakness is the contradiction between the wide range of information required to evaluate the full non market value of agriculture and the level of precision required for these empirical econometric studies.

Element of definition

For researchers within this CORC, the multiple roles or functions of farming relate above all to expectations of the society or community of which it is part, that is, to the various social demands, which are often understood in the sense of requirements.

The academic justification of domestic support to farmers mainly comes from the theoretical arguments based on the supply side characteristic of multifunctionality. It has often been argued that the evidence of a significant social demand for multifunctionality is much weaker.

Empirical elements

Léger (2001) and d'Auvergne *et al.* (2000), as well as Raymond (2003), specify the expectations of local actors through consultation procedures among local actors and farmers in the local implementation of CTEs. D'Auvergne *et al.* (2000) propose a consultation support tool designed to promote explanation of these expectations.

Bonny (1999) endeavours to characterise the demands towards agriculture expressed by the various categories of consumers (processing, distribution, end consumers) and questions the relevance of their demands in guiding the actual direction agriculture takes. This enquiry raises the question whether consumers are well informed about the goods they consume, notably environmental goods.

Bertrand and Tolron (2002) indicate that user expectations in periurban areas in terms of landscape or recreational environment are generally not directed to agriculture, casting doubt on the very idea of agricultural multifunctionality in these areas.

2.8. Governance, policy and multifunctionality

Scientific perspective

CORC 8 is made of researchers referring to the functions of agriculture explicitly and objectively recognized in legal or official texts underpinning agricultural policies. Researchers here study the existence of MF in such texts, and the consistency of new official objectives (regarding the promotion of MF) with the policy measures or the institutional arrangements implemented (in particular in France the CTE), using expertise most of the time. Other research question are for example : to what extent does MF modify the principles and modalities of previous farm policies ? To what extent does it constitute a new paradigm or a new guide for agricultural policies (socio-economists, researchers in political sciences, jurists)? The main strength of this CORC is its ability to help judging if political claims are actually converted into real policy reforms and farming practices and to help providing an impact assessment of such policies, and its main weakness is a lack of analysis of the economic rationale of the policy measures

Elements of definition

This CORC refers to the functions of agriculture explicitly recognized in the legal texts underpinning agricultural policies. Some researchers here study the consistency of this new official objective (promoting multifunctionality) with policy measures implemented using expertise most of the time. Several authors try to see if multifunctionality constitutes a new paradigm or can be a new guide for agricultural policies (socio-economists and researchers in political sciences) and rural laws (see Massot, 2003; Delorme, 2003). In particular, multifunctionality might also become a new paradigm forming the basis of agricultural policies and strategies for North and South alike, given the common need for some degree of protection and some degree of latitude in both contexts (see Losch, 2004).

In the Netherlands, the question relates to the lack of institutional support in terms of research, policy, spatial planning, the remuneration of green and blue rural services, to help agriculture to move in accordance to its new societal goals (see the Dutch national report, by Rope and Oostindie, 2004).

Delorme (2003) studies the actual expressions of this hypothetical new paradigm through changes in the CAP instruments, the range of national adaptations of the policy, the distribution of aid and the differing conceptions held by the multiple actors involved in multifunctionality. For her, as for Perraud (2003), the concept of multifunctionality has not yet been stabilised and may take on different meanings in the future and signify either the accompanying of a 'movement of sectoral downturn' due to the structural adjustment in agriculture, or the emergence of a new development paradigm.

Ollivier (2000), argues that the recognition of multifunctionality by legislation and the introduction of instruments like the CTEs builds a new reference system that the state has to implement locally so as to give impetus to real changes in farming practices. Cuissard (2002) examines whether the recognition of multifunctionality in legislation is translated into a 'multifunctionalisation' of policy by analysing to what extent local institutions promote a form of multifunctional production compared with a monofunctional productivist farming. For Bodiguel (2002 and 2003) rural law does include the new

orientations of agricultural policies and multifunctionality has indeed acquired some legal substance, since the concept of territory brings multifunctionality to the realm of law, constituting a legal criterion for the attribution of aid.

Couturier (2002) looks at whether the official recognition of multifunctionality alters the specific status of agriculture relative to non-agricultural commercial activities. Peignot (2002) questions the efficiency of the current legal framework for providing a definition of rights and duties to agricultural leases, which would include farmers duties towards society. Facchini (2002) analyses the economic efficiency of arrangements for attributing property rights over the environment, based on the various 'multifunctionality policies' implemented in France (PMPOA, agro-environmental measures and then CTEs).

Empirical elements

Savy (1999) also questions whether the new agricultural orientation legislation in France in 1999 was really a break with the past for agricultural policy and the emergence of a new institutionalised social pact. Jauneau and Roque (2002) examine the impact of CTEs on the widening of farmers' functions. Berriet-Sollicet *et al.* (2003) investigate both the economical efficiency (allocation of scarce resources) and the redistributive impact of CTE. Josien *et al.* (2001) take a sample of CTEs to state the impact of the 'holding diagnosis' in relation to the social demand in the terms of reference of the contracts. Gafsi (2002) shows that the more multifunctional farms are those which are well integrated in 'localised and coherent dynamics of creating and enhancing the geographical area's resources'. Some base their analysis on the consultation procedures among different actors preceding the definition of standard contracts to identify challenges for a geographical area (Rémy, 2000 ; Pivot *et al.* (2003)).

Struillou (2002 and 2003) enquires into the characteristics of contractual norms which emerge locally from the local actors implementation of CTEs.

Domas (2002) looks at the efficiency of contract as a tool for redefining agricultural policy, taking account of the 'needs of geographical areas and consumers'.

Conclusion

While the political recognition of multifunctionality at the international level seemed more and more difficult to obtain in the trade negotiation context, the concept of multifunctionality as a research object gained all disciplines and streams. The societal stakes raised by the political debate are still crucial, and the corresponding policy remains to be invented.

The necessity to find a multilateral framework for domestic policies aiming at taking into account non trade purposes seems even more and more striking with the progressive liberalization of agriculture in the world.

The explicit debate on multifunctionality is now rather located at national and regional levels, and tends to move from a trade-related problematic to other fields like rural and agricultural development models. We have identified the most striking needs for further research under the form of controversial issues, which are summarised in table 1.

A better integration and strengthening of scientific communities is probably required. It is too early to call the identified clusters epistemic communities. The evolution of each concept of multifunctionality inside each epistemic community and the way research teams have made it a research topic is not completely clarified yet (why and how some groups of researchers have used this idea of multifunctionality at some stage of their scientific work). This could further be addressed through specific research activity or networking.

But this migration from the political agenda to the research teams was probably a necessary stage for the idea of multifunctionality to gain more credibility, more objectivity, and more scientific content, in relation to sustainable development.

Furthermore, whatever the paths of the negotiations, countries will have to agree at some point on a multilateral framework to harmonize domestic policies aiming at satisfying societies preferences and demands towards agriculture, and that are likely to have trade effects. The question is : will negotiators be able to mobilize efficiently the existing knowledge on multifunctionality ? Our classification should help them to see more clearly how to use this knowledge.

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Annex. Classification of the main CORCs working explicitly on MFA or on related concepts

| Corc | Disciplines | Research questions and controversies | Use in policy making | List of related functions | Weaknesses or limits | Other words or concepts used instead | Related concepts |
|--|--|---|--|--|--|---|--|
| Joint production of commodities and public goods | Neoclassical economics | <ul style="list-style-type: none"> Jointness between agricultural production and other goods <i>Blandford et al., (2002); Bonnieux and Rainelli (2000 ; Cretegy (2002); Dupraz and Bonnieux (2003) ; Lankoski J. (ed.), 2000; OECD (2000) ; Randall (2002); Reig (2001); Requier-Desjardins (2002); Romstad et al. (2001); Vermersch (2004)</i> Efficiency of public policies, private arrangements, international agreement to deal with public goods and externalities <i>Guyomard (2000); Hediger (2003; 2004), Hediger and Lehmann (2003) ; Hodge, I. (2000); Le Goffe and Mahé (2000) ; Legg, 2001; Mahé and Laroche (2000); Mahé and Ortalo-Magne (2001) ; Mollard (2003); OECD (2003); Peterson et al. (2002); Romstad et al. (2001) ; Salanié and Le Goffe (2002) ; Tió & Atance (2001) ; Vatn (2002).</i> Legitimacy of non-trade policy targets according to their impacts on international trade. <i>Anderson (1997) ; Bohman et al. (1999); OECD (2003) ; Peterson et al. (2002)</i> | <p>Coming from international debate (WTO, OECD)</p> <p>Main theoretical background used in the international debate and negotiations, then used at the national policy level</p> <p>Response to the need for “firm” if not “objective” arguments and information on the efficiency of farm policies</p> | <p>Environmental externalities and public goods</p> <p>Functions requiring public intervention in the light of welfare economics</p> | <p>Restrictive view of multifunctionality (mainly contributions to environment)</p> <p>Primarily driven by theoretical concerns</p> <p>Relatively little attention to assess function integration</p> <p>Partial analyses not adequate for effectively assessing the total value of agriculture</p> <p>Not adequate for southern countries</p> | <p>Externalities</p> <p>Public goods</p> <p>Joint production</p> <p>Non-marketable goods</p> <p>Other goods</p> | <p>Market failures</p> <p>Distortion</p> <p>Decoupling</p> |
| Multiple impacts and contributions from agriculture to rural areas | Economists Agronomists Geographers Natural scientists | <ul style="list-style-type: none"> Assessment of impacts / contributions (to employment, erosion prevention, water quality, economic development, etc) <i>Aznar and Perrier-Cornet (2003) ; Bonnal et al. (2003); Callois et al. (2002); Daniel (2002), Deraeve (2002) ; Guyomard and Levert (2001), Gohin and Guyomard (2003); Laurent (1999); Revel et al. (2002), Pingaud (2001), Ploeg, 2001, Roep & Wiskerke, 2004.; Léger (2001) and Berriet-Sollicet (2000)).</i> How to promote (or mitigate) those impacts and contributions <i>Bazin and Kroll (2002) ; Chatellier et al. (2003) ; Hadynska and Hadynski (2004); Solagral (1999).</i> | <p>Coming from farm sector structural changes and changes in societal concerns</p> <p>Highlight the contributions of agriculture and the effects of policy measures for environment, employment, etc</p> <p>Design of existing concrete needs: like the efficient pricing systems for irrigation, and saving valuable water resources.</p> | <p>Wide-ranging lists of functions, collating all identifiable contributions or positive impacts</p> | <p>Works within this CORC often do not take into account the whole impacts of farming activities (negative impacts, economic costs) necessary to draw the relative merits of farming systems to fulfill the expected functions</p> | <p>Externalities (positive / negatives)</p> <p>Public goods</p> <p>Multiple effects</p> <p>Roles of agriculture</p> <p>New ruralities</p> | |
| <i>A complementary and conflicting connection between commodities and identity goods</i> | Institutional economics | <ul style="list-style-type: none"> Impacts of the liberalisation on identity <i>Barthélémy (2003); Sabourin and Djama (2002);</i> Conditions for producing and trading such goods <i>Aznar and Guérin (2002) ; Barthélémy and Nieddu (2002); Djama (2003); Mercoiret et al., (2004) Sabourin (2003) ; Sourisseau et al. (2004).</i> Determinants of public-policy reform <i>Andriot (2003) ; Bodiguel (2004) ; Castelbou (2003) ; Doussan (2004) ; Dubois (2003)</i> | <p>Coming from “non standard” economists in reaction to standard economics postulates and conclusions</p> | <p>Set of identity goods</p> | <p>Restrictive view of the determinants of policy efficiency</p> | | <p>Market and non-market outputs</p> |

| Core | Disciplines | Research questions and controversies | Waves & use in policy making | List of related functions | Weaknesses or limits | Other words or concepts used instead | Related concepts |
|---|---|---|--|--|--|---|---|
| <i>Farmers strategies and practices: multifunctionality, technical change, livelihood systems</i> | Agronomics Rural Economics | <ul style="list-style-type: none"> What is the interpretation of multifunctionality in terms of practices? <i>Girard et al (2004) ;Laurent et Maxime (2003); Roep and Oostindie (2004)</i> To what extent has the recognition of multifunctionality led to changes in farmers' practices <i>Léger (2001); Josien et al. (2001) ; Roep and Oostindie (2004)</i> | Coming both from politicians and farmers in a view of improving practices as a response to new social concerns Useful for the understanding of impacts of policies on environment, employment ... | Set of "good practices" | | | Technical choices, livelihood systems |
| Multiple use of rural space & regional planning | Urban and rural planning Landscape architecture Social geography | <ul style="list-style-type: none"> What is the contribution of function integration to maintain attractive or sustainable rural areas <i>Reig (2004); Roep and Oostindie (2004); Mahé (2001), Mahé and Ortalo-Magné, 2001; Guyomard (2001) and Hervieu et al. (2001)</i> How to organize spatial planning in line with changes in societal demands. <i>Roep and Oostindie (2004)</i> | Input for national debate on the pro's and con's of function integration as a way to deal with the scarcity of national land and spatial resources | Broadly defined, with a specific attention for nature, landscape, leisure, water management, expansion of living areas, infrastructure, etc. | Little specific attention for the multifunctionality of agriculture, focus on the potential of function integration at local and regional levels instead of enterprise-levels | | multiple use of space; green and blue rural services; public-private partnerships |
| <i>A way toward sustainable agriculture and rural development (SARD) regulation</i> | Socio-economics Political science Agri-economics Agronomy Rural sociology Geography Economics (institutional economy, regional economy) | <ul style="list-style-type: none"> How can multifunctionality contribute to the renewal of countryside ? <i>Aznar and Guérin (2002); FAO (1999, 2001, 2004); Hedinger 2004; OECD, 1995; Reig, 2004; Roep and Oostindie, 2004</i> How to support and activate rural population ? <i>Reig, 2004; Hadynska and Hadynski, 2004; Ploeg, 2001, Roep & Wiskerke, 2004; Daniel, 2002; Guyomard and Levert (2001), and Gohin and Guyomard (2003).</i> To what extent can these functions contribute to SARD? <i>Lehmann (2002); Roep and Oostindie, 2004;</i> How can multifunctionality help implementing agenda 21 | Coming from government, to deal with structural adjustment consequences (Poland) Socio-economic impact of MFA, its potential to contribute to SARD, the construction of innovative policy designs, etc. | Regional policy Agri-tourism, environmental Socio – technical infrastructure Social, environmental, agricultural and ecological functions landscape/nature service functions of rural areas' related to recreational and settlement activities. Broadly defined, with a specific attention for functions that represent (potential) public and/or private markets. | This CCRC is connected with sustainability but relates only to the people working in the agricultural sector Lack of adequate data material due to the dominance of sectoral approaches in statistical institutes, growing problems around the delineation of agricultural activities | Multidimensional Regional development Development of infrastructure Development of rural population Integrated agriculture, the broadening of agriculture, conservation agriculture | Local and regional development Urban and rural development Social requirements Deepening, broadening and regrouping of agriculture, livelihood-strategies; asset specificity; new institutional arrangements |

| Core | Disciplines | Research questions and controversies | Waves & use in policy making | List of related functions | Weaknesses or limits | Other words or concepts used instead | Related concepts |
|--|---|---|---|---|--|--------------------------------------|---|
| A social demand towards agriculture | Expertise Management Geographic economics | <ul style="list-style-type: none"> Identification of social demands <i>Bertrand and Tolron (2002); Bonny (1999); Léger (2001) and d'Auvergne et al. (2000), as well as Raymond (2003), Salanié and Le Goffe (2002);</i> How agriculture can address them <i>Bertrand and Tolron (2002); Vermersch (2004)</i> | Coming from government and scientists Useful for the understanding of the supply side of Mfa | Expectations from various social groups towards agriculture | | | Social requirements or expectations Sustainability |
| Governance, policy and multifunctionality) | Economic and agronomic expertise Political science and economics Epistemology | <ul style="list-style-type: none"> To what extent is the multifunctional official objective consistent with policy measures (CTE, CAP measures) ? <i>Berriet-Sollicet et al. (2003); Delorme (2003); Facchini (2002); Rope and Oostindie, 2004); Savy (1999); Struillou (2003)</i> Is multifunctionality a new paradigm for policy design <i>Bodiguel (2002 and 2003); Cuissard (2002); Delorme (2003); Domas (2002); Losch, (2004); Massot, (2003); Peignot (2002); Perraud (2003); Rémy (2000); Pivot et al. (2003)).</i> What are the implications for the renewal of holding economic models ? <i>Couturier (2002); Gafsi (2002); Jauneau and Roque (2002) Josien et al. (2001); Ollivier (2000)</i> | Coming from scientists Useful for the understanding of the efficiency of a policy regarding its objectives | Set of functions of agriculture explicitly mentioned in public policies | Doubts from scientists on the scope of the will of public administration at the national and UE level to really promote non – production function of agriculture | | Multiple contributions |